Dietary lecithin improves the healthiness of pork

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Dietary lecithin may provide health benefits to pork as well as improving its eating quality by reducing chewiness and hardness (D'Souza *et al.*, 2005). Human studies have shown lecithin supplementation can reduce cholesterol significantly (Spilburg *et al.*, 2003) and we hypothesised that lecithin supplementation would have a similar effect in pigs. The use of lecithin supplementation to improve the 'healthiness' of pork or pork products, while also improving the tenderness of pork, could provide the pork industry with significant marketing opportunities. The aim of this experiment was to investigate the effect of lecithin supplementation on the fatty acid profile of pork and also on the plasma cholesterol of pigs.

Forty crossbred (Large White x Landrace x Duroc) female pigs in the grower and finisher growth phases were fed either 1) Control - a commercial diet, 2) 3 g lecithin per kg of feed (soybean lecithin, ADM Australia Pty Ltd), 3) 15 g lecithin per kg feed or, 4) 75 g lecithin per kg of feed. The pigs were housed individually and had *ad libitum* access to feed and water. Pigs were slaughtered at about 23 weeks of age (100 kg ± 1 kg) and their blood sampled to determine plasma cholesterol concentrations. The *Longissimus thoracis* muscle was removed at 24 h after slaughter and frozen at –80°C for fatty acid analysis. All data were analysed by ANOVA.

Dietary lecithin supplementation at 75 g/kg significantly increased the levels of linoleic acid and reduced the levels of myristic acid in pork. Although not significant, pigs fed the diet supplemented with 75 g/kg lecithin tended to have lower plasma cholesterol at slaughter than pigs fed the control diet.

Table 1. Fatty acid composition (%) and total fat of the *Longissimus thoracis* muscle and plasma cholesterol concentrations of pigs fed diets supplemented with lecithin.

	Control	Lecithin 3 g/kg	Lecithin 15 g/kg	Lecithin 75 g/kg	lsd	P- value
Myristic acid 14:0	1.8	1.7	1.9	1.5	0.262	0.041
Palmitic acid 16:0	23.3	22.3	22.0	23.1	1.21	0.121
Heptadecenoic acid 17:0	0.47	0.57	0.36	0.15	0.554	0.470
Stearic acid 18:0	11.1	11.2	11.1	11.4	0.72	0.776
Oleic acid 18:1	33.8	34.7	34.0	31.2	4.65	0.462
Linoleic acid 18:2	16.6	16.8	15.4	20.8	3.91	0.043
Eicosadienoic acid 20:2	4.1	4.0	3.3	3.4	1.24	0.453
PUFA:SFA*	0.58	0.62	0.53	0.70	0.151	0.150
Total fat (%)	1.3	1.2	1.1	1.2	0.326	0.905
Plasma cholesterol (mmol/L)	2.7	2.2	2.5	2.0	0.507	0.064

*PUFA polyunsaturated fatty acid; SFA saturated fatty acids.

These results suggest that dietary lecithin works in pigs similarly to humans due to its effects on lowering cholesterol and increasing the levels of polyunsaturated fatty acid in muscle. We conclude that supplementing diets with lecithin has the potential to improve the 'healthiness' of pork.

References

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